

Centre No.						Paper Reference						Surname	Initial(s)	
Candidate No.						1	3	8	0	/	4	H	Signature	

Paper Reference(s)

**1380/4H**

**Edexcel GCSE**

**Mathematics (Linear) – 1380**

**Paper 4 (Calculator)**

**Trigonometry**

Past Paper Questions

Arranged by Topic

Model Answers

**Materials required for examination**

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

**Items included with question papers**

Nil

Examiner's use only

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Team Leader's use only

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**Instructions to Candidates**

In the boxes above, write your centre number, candidate number, your surname, initials and signature. Check that you have the correct question paper.

Answer ALL the questions. Write your answers in the spaces provided in this question paper.

**You must NOT write on the formulae page.**

**Anything you write on the formulae page will gain NO credit.**

If you need more space to complete your answer to any question, use additional answer sheets.

**Information for Candidates**

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).

There are 26 questions in this question paper. The total mark for this paper is 100.

There are 24 pages in this question paper. Any blank pages are indicated.

**Calculators may be used.**

If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.142 unless the question instructs otherwise.

**Advice to Candidates**

Show all stages in any calculations.

Work steadily through the paper. Do not spend too long on one question.

If you cannot answer a question, leave it and attempt the next one.

Return at the end to those you have left out.

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*Turn over*

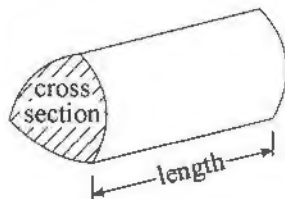
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**GCSE Mathematics (Linear) 1380**

**Formulae: Higher Tier**

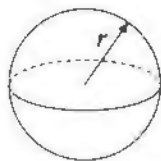
**You must not write on this formulae page.  
Anything you write on this formulae page will gain NO credit.**

**Volume of a prism** = area of cross section  $\times$  length



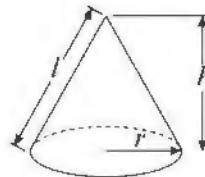
**Volume of sphere** =  $\frac{4}{3}\pi r^3$

**Surface area of sphere** =  $4\pi r^2$

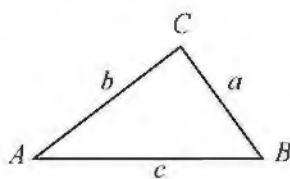


**Volume of cone** =  $\frac{1}{3}\pi r^2 h$

**Curved surface area of cone** =  $\pi r l$



**In any triangle ABC**



**The Quadratic Equation**

The solutions of  $ax^2 + bx + c = 0$   
where  $a \neq 0$ , are given by

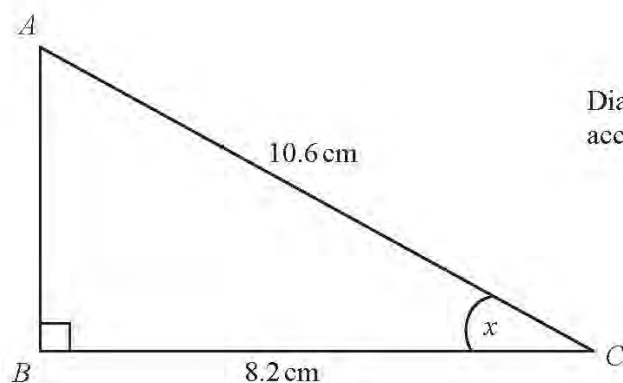
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

**Sine Rule**  $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

**Cosine Rule**  $a^2 = b^2 + c^2 - 2bc \cos A$

**Area of triangle** =  $\frac{1}{2}ab \sin C$

1.



$ABC$  is a right-angled triangle.

$AC = 10.6$  cm.

$BC = 8.2$  cm.

Calculate the size of the angle marked  $x$ .

Give your answer correct to 3 significant figures.

$$\cos = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$

$$\cos x = \frac{8.2}{10.6}$$

$$x = 39.323$$

.....39.3.....

Q1

(Total 3 marks)

2. Here is a right-angled triangle.

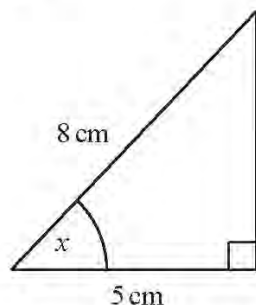


Diagram **NOT**  
accurately drawn

- (a) Calculate the size of the angle marked  $x$ .  
Give your answer correct to 1 decimal place.

$$\cos = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$

$$\cos x = \frac{5}{8}$$

$$x = 51.3178$$

$$x = 51.3 \dots \dots \dots ^\circ$$

**(3)**

Here is another right-angled triangle.

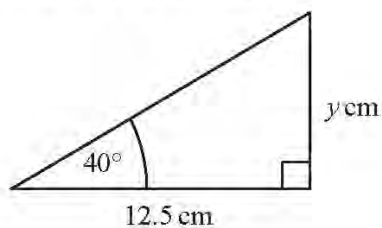


Diagram **NOT**  
accurately drawn

- (b) Calculate the value of  $y$ .  
Give your answer correct to 1 decimal place.

$$\tan = \frac{\text{Opposite}}{\text{Adjacent}}$$

$$\tan 40^\circ = \frac{y}{12.5}$$

$$y = 12.5 \tan 40^\circ$$

$$y = 10.488$$

$$y = 10.5 \dots \dots \dots$$

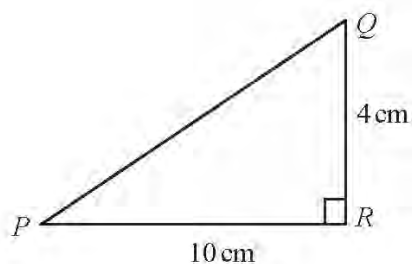
**(3)**

**Q2**

**(Total 6 marks)**

3.

Diagram **NOT**  
accurately drawn



$PQR$  is a right-angled triangle.

$$QR = 4 \text{ cm}$$

$$PR = 10 \text{ cm}$$

Work out the size of angle  $RPQ$ .  
Give your answer correct to 3 significant figures.

$$\tan = \frac{\text{Opposite}}{\text{Adjacent}}$$

$$\tan 40^\circ = \frac{y}{12.5}$$

$$\tan RPQ = \frac{4}{10}$$

$$\angle RPQ = 21.8014$$

$$\dots\dots\dots 21.8^\circ$$

(Total 3 marks)

Q3

4.

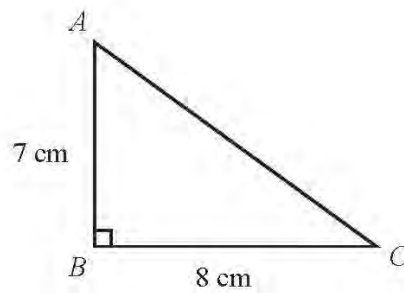


Diagram **NOT**  
accurately drawn

$ABC$  is a right-angled triangle.

$AB = 7$  cm,

$BC = 8$  cm.

(a) Work out the area of the triangle.

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2} \times 8 \times 7$$

$$A = 28$$

.....28....  $\text{cm}^2$   
(2)

(b) Work out the length of  $AC$ .

Give your answer correct to 2 decimal places.

$$AC^2 = AB^2 + BC^2$$

$$AC^2 = 7^2 + 8^2$$

$$AC^2 = 49 + 64$$

$$AC^2 = 113$$

$$AC = \sqrt{113}$$

$$AC = 10.6301$$

.....10.63. cm  
(3)

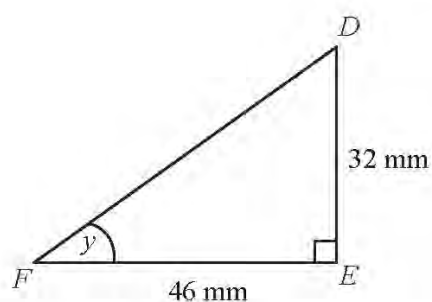


Diagram **NOT**  
accurately drawn

*DEF* is another right-angled triangle.

*DE* = 32 mm,

*FE* = 46 mm.

- (c) Calculate the size of angle *y*.  
Give your answer correct to 1 decimal place.

$$\tan = \frac{\text{Opposite}}{\text{Adjacent}}$$

$$\tan y = \frac{32}{46}$$

$$y = 34.8244$$

..... 34.8 °  
(3)

(Total 8 marks)

Q4

5.

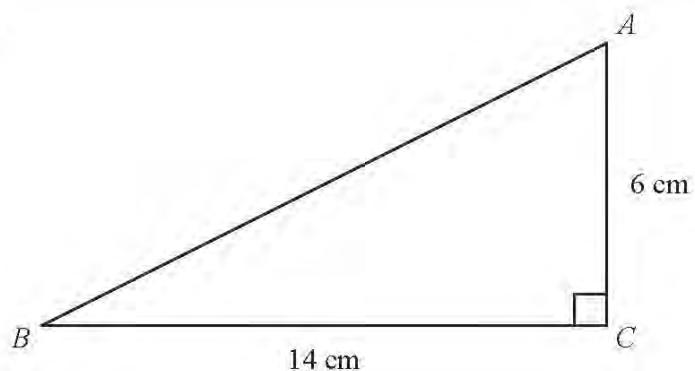


Diagram **NOT**  
accurately drawn

$ABC$  is a right-angled triangle.

$AC = 6$  cm.

$BC = 14$  cm.

(a) Work out the area of triangle  $ABC$ .

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2} \times 14 \times 6$$

$$A = 42$$

.....42.....  $\text{cm}^2$   
(2)

(b) Calculate the length of  $AB$ .

Give your answer correct to 2 decimal places.

$$AB^2 = 14^2 + 6^2$$

$$AB^2 = 196 + 36$$

$$AB^2 = 232$$

$$AB = \sqrt{232}$$

$$AB = 15.2315$$

.....15.23..... cm  
(3)

(Total 5 marks)

Q5



Leave  
blank

6.

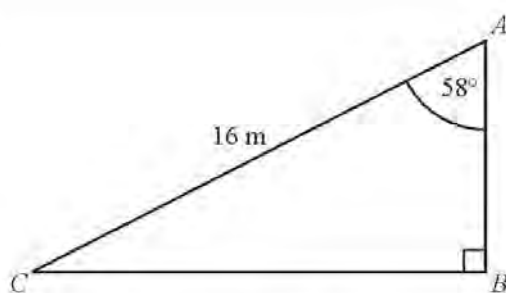


Diagram **NOT**  
accurately drawn

$ABC$  is a right-angled triangle.

$AC = 16$  m.

Angle  $CAB = 58^\circ$

Calculate the length of  $AB$ .

Give your answer correct to 3 significant figures.

$$\cos = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$

$$\cos 58^\circ = \frac{AB}{16}$$

$$AB = 16 \cos 58^\circ$$

$$AB = 8.4787$$

.....8.48 m  
(Total 3 marks)

Q6

Leave  
blank

7.

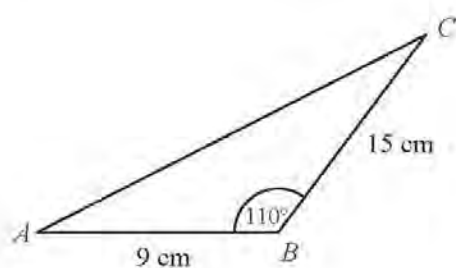


Diagram **NOT**  
accurately drawn

$ABC$  is a triangle.

$AB = 9 \text{ cm}$

$BC = 15 \text{ cm}$

Angle  $ABC = 110^\circ$

Calculate the area of the triangle.

Give your answer correct to 3 significant figures.

$$A = \frac{1}{2}ac \sin B$$

$$A = \frac{1}{2} \times 9 \times 15 \sin 110^\circ$$

$$A = 64.4292$$

..... 64.4 .....  $\text{cm}^2$

(Total 3 marks)

Q7

Leave  
blank

8. Town  $B$  is 4.5 km due West of town  $C$ .  
Town  $A$  is 2.4 km due North of town  $B$ .

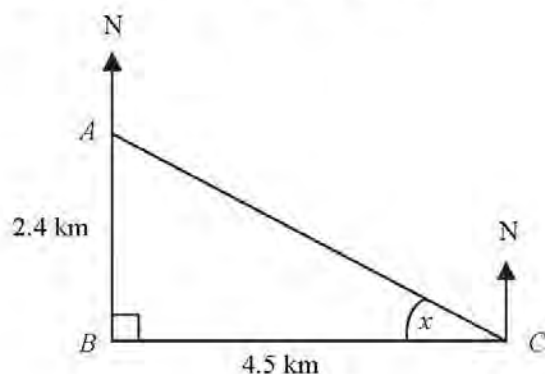


Diagram **NOT**  
accurately drawn

- (a) Calculate the size of the angle marked  $x$ .  
Give your answer correct to 3 significant figures.

$$\tan = \frac{\text{Opposite}}{\text{Adjacent}}$$

$$\tan x = \frac{2.4}{4.5}$$

$$x = 28.072$$

$$x = \dots\dots\dots 28.1^\circ$$

(3)

- (b) Find the bearing of town  $C$  from town  $A$ .  
Give your answer correct to 3 significant figures.

$$\angle A = 180 - 90 - 28.072$$

$$\angle A = 61.928$$

Bearing of  $C$  from  $A$

$$180 - 61.928$$

$$= 118.072$$

$$\dots\dots\dots 118^\circ$$

(1)

(Total 4 marks)

**Q8**

9.

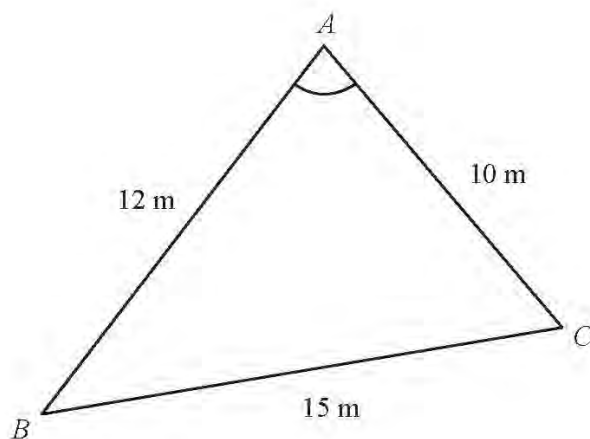


Diagram **NOT**  
accurately drawn

$ABC$  is a triangle.

$AB = 12$  m.

$AC = 10$  m.

$BC = 15$  m.

Calculate the size of angle  $BAC$ .

Give your answer correct to one decimal place.

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{10^2 + 12^2 - 15^2}{2 \times 10 \times 12}$$

$$\cos A = \frac{19}{240}$$

$$A = 85.459 \quad (\text{use } \cos^{-1} \text{ or INV cos key})$$

85.5 °

Q9

(Total 3 marks)

10.

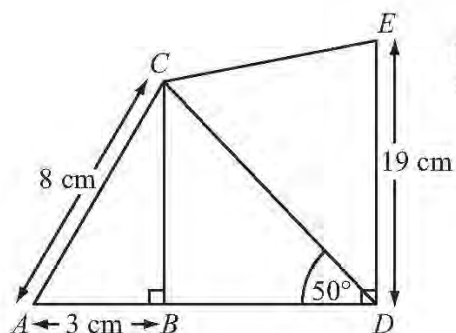


Diagram **NOT**  
accurately drawn

$$AC = 8 \text{ cm.}$$

$$AB = 3 \text{ cm.}$$

$$DE = 19 \text{ cm.}$$

$$\text{Angle } ABC = \text{angle } CBD = \text{angle } BDE = 90^\circ.$$

$$\text{Angle } BDC = 50^\circ.$$

(a) Calculate the length of  $CD$ .

Give your answer correct to 3 significant figures.

$$CB^2 = CA^2 - AB^2 \quad (\text{Pythagoras})$$

$$CB^2 = 8^2 - 3^2$$

$$CB^2 = 64 - 9$$

$$CB^2 = 55$$

$$CB = 7.42$$

$$\sin = \frac{\text{Opposite}}{\text{Hypotenuse}}$$

$$\sin 50^\circ = \frac{7.42}{CD}$$

$$CD \sin 50^\circ = 7.42$$

$$CD = \frac{7.42}{\sin 50^\circ} = 9.686$$

$$\dots\dots\dots 9.69 \dots\dots \text{ cm} \quad (4)$$

(b) Calculate the length of  $CE$ .

Give your answer correct to 3 significant figures.

$$d^2 = e^2 + c^2 - (2ec \cos D)$$

$$d^2 = 9.69^2 + 19^2 - (2 \times 9.69 \times 19 \cos 40^\circ)$$

$$d^2 = 172.823$$

$$d = \sqrt{172.823}$$

$$d = 13.1462$$

$$\dots\dots\dots 13.2 \dots\dots \text{ cm} \quad (3)$$

(Total 7 marks)

Q10

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